CLAIMS:

1. A method of using at least a part of a cavity for a first and at least one second laser, comprising the steps of:

a) providing a first laser beam to the part of the cavity,

b) splitting the first beam into a first and a second part,

c) splitting the first part into a third and a fourth part,

d) splitting the second part into a fifth and a sixth part,

e) superimposing the third and the fifth part in a way causing extinguishing interference,

f) superimposing the fourth and the sixth part in a way causing cumulative interference to provide a first resulting beam, and

g) performing steps a) to f) with at least one second laser beam to provide a second resulting beam.

2. The method of claim 1, further comprising:

letting each first part travel the same path as each second part but in opposite direction.

3. The method of claim 1, further comprising:

performing steps a) to f) for each laser beam at the same point.

4. The method of claim 1, further comprising:

performing step a) for both laser beams at the same point.

5. The method of claim 1, further comprising:

selecting at least one mode of the laser by filtering the first and/or the

second part at least one time.

7. The method of claim 6, further comprising the steps of:

selecting at least one mode of the laser by filtering the first and/or the second part two times.

8. A method of using at least a part of a cavity for at least two laser beams, the part comprising a path for the laser beams constituting a closed loop, comprising the steps of:

introducing a beam splitter to be an element of the closed loop,

providing the at least two laser beams to the beam splitter from different sides of the beam splitter.

9. The method of claim 8,

wherein the beam splitter is splitting each laser beam into a first and a second part, further comprising the steps of:

letting the parts of the first laser beam travel the closed loop in opposite directions, and

letting the parts of the second laser beam travel the closed loop in opposite directions.

10. A method of using a beam splitter, comprising the steps of:

a) providing a laser beam along a first direction,

b) splitting the beam into a first part leaving the beam splitter along a second direction and a second part leaving the beam splitter along a third direction,

c) guiding the first part back to the beam splitter to hit the beam splitter

along the opposite direction of the third direction and guiding the second part back to the beam splitter to hit the beam splitter along the opposite direction of the second direction,

d) superimposing both parts in a way causing extinguishing interference along the opposite direction of the second direction and causing positive interference along the opposite direction of the first direction.

11. An apparatus for using at least a part of a cavity for a first and at least one second laser, comprising:

a beam splitter being an element of the part of the cavity for

a) splitting the first beam provided to the beam splitter into a first and a second part,

b) splitting the first part into a third and a fourth part,

c) splitting the second part into a fifth and a sixth part,

d) superimposing the third and the fifth part in a way causing extinguishing interference,

e) superimposing the fourth and the sixth part in a way causing cumulative interference to provide a first resulting beam, and

for performing steps a) to e) with the at least one second laser beam provided to the beam splitter to provide a second resulting beam.

12. The apparatus of claim 11, further comprising:

at least three mirrors as elements of the part of the cavity for constituting a closed loop together with the beam splitter for letting each first part travel the same path as each second part but in opposite direction.

13. The apparatus of claim 11, further comprising:

a filter for selecting at least one mode of the laser by filtering the first and/or the second part at least one time.

14. The apparatus of claim 11, further comprising:

a second beam splitter being an element of the part of the cavity for coupling out low SSE laser light out of the loop. .

15. An apparatus of using a beam splitter, comprising:

a laser source for providing a laser beam along a first direction,

the beam splitter splitting the beam into a first part leaving the beam splitter along a second direction and a second part leaving the beam splitter along a third direction,

a laser guide guiding the first part back to the beam splitter to hit the beam splitter along the opposite direction of the third direction and guiding the second part back to the beam splitter to hit the beam splitter along the opposite direction of the second direction, and

the beam splitter superimposing both parts in a way causing extinguishing interference along the opposite direction of the second direction and causing positive interference along the opposite direction of the first direction.

16. An optical arrangement comprising:

a beam splitter adapted to receive a first incident beam from a first direction and a second incident beam from a second direction different from the first direction, and

three plates with two plates being arranged parallel to each other and the third plate being perpendicular to the two parallel plates,

wherein the beam splitter is adapted to split up the first incident beam into two partial beams, each being at least partly reflected by each of the three plates, so that both partial beams travel substantially the same path but with opposite directions and constructively interfere to a first output beam propagating parallel to but with opposite direction than the first incident beam, and

wherein the beam splitter is adapted to split up the second incident beam into two partial beams, each being at least partly reflected by each of the three plates, so that both partial beams travel substantially the same path but with opposite directions and constructively interfere to a second output beam propagating parallel to but with opposite direction than the second incident beam.

17. The optical arrangement of claim 16, wherein the splitting ratio of the beam splitter is adjusted that other output beams than the first or second output beams are canceled by destructive interference.

18. The optical arrangement of claim 16, wherein the splitting ratio of the beam splitter is adjusted to substantially 50:50, so that each incident beam is divided into substantially equal partial beams.

19. The optical arrangement of of claim 16, wherein one of the two parallel plates is provided in a way to reflect the second incident beam before reaching the beam splitter and to reflect the second output beam after passing the beam splitter, so that the two incident beam reach the optical arrangement in parallel and the two output beams leave the optical arrangement in parallel.

20. A laser arrangement comprising:

a first laser device adapted for emitting a first laser beam to a wavelength filter for wavelength filtering the first laser beam and directing the

wavelength filtered first laser beam to an optical arrangement according to any one of the claims 16 to 19, wherein the wavelength filtered first laser beam is received by the optical arrangement as its first incident beam and retroreflected as its first output beam back towards the wavelength filter, and

a second laser device adapted for emitting a second laser beam to the wavelength filter for wavelength filtering the second laser beam and directing the wavelength filtered second laser beam to the optical arrangement, wherein the wavelength filtered second laser beam is received by the optical arrangement as its second incident beam and retroreflected as its second output beam back towards the wavelength filter.